FISHERIES RESEARCH BOARD OF CANADA

ARCTIC BIOLOGICAL STATION,

Ste. Anne de Bellevue, P.Q.

Circular No. 9

# Populations of Large Whale Species in the Western North Atlantic with Special Reference to the Fin Whale.

By

D. E. Sergeant

October 1966

LIBRARY
BOREAL INSTITUTE
NOV 18 1966

POLAR
PAM
3491
POLARPAM

pam: 599.5:(461) SER

FISHERIES RESEARCH BOARD OF CANADA

ARCTIC BIOLOGICAL STATION,

Ste. Anne de Bellevue, P.Q.

Circular No. 9

# Populations of Large Whale Species in the Western North Atlantic with Special Reference to the Fin Whale.

By

D. E. Sergeant

October 1966

05233

LIBRARY
BOREAL INSTITUTE

NOV 18 1966

TABLE OF CONTENTS


| | |
|---|---|
| INTRODUCTION | 1 |
| SPECIES STUDIES | 3 |
| Fin whale Balaenoptera physalus (L.). | 3 |
| Sei whale B. borealis Lesson. | 7 |
| Blue whale Sibbaldus musculus (L.) | 7 |
| Humpback whale Megaptera novaeangliae (Borowski). | 9 |
| Sperm whale Physeter catodon L. | 10 |
| Right whale Eubalaena glacialis (Borowski). | 10 |
| SUMMARY | 10 |
| ACKNOWLEDGMENTS | 12 |
| REFERENCES | 12 |

TABLE OF CONTENTS


INTRODUCTION 1

SPECIES STUDIES 3

Fin whale *Balaenoptera physalus* (L.). 3

Sei whale *B. borealis* Lesson. 7

Blue whale *sibbaldus musculus* (L.) 7

Humpback whale *Megaptera novaeangliae* (Borowski). 9

Sperm whale *Physeter catodon* L. 10

Right whale *Eubalaena glacialis* (Borowski). 10

SUMMARY 10

ACKNOWLEDGMENTS 12

REFERENCES 12

# INTRODUCTION

Modern whaling is concentrated on the large whalebone whales including the large rorquals of the genus Balaenoptera (fin, blue and sei whales) and humpback Megaptera, as well as the largest of the toothed whales, the sperm-whale Physeter.

There have been three phases of whaling from land stations in Newfoundland and Labrador. The first, lasting from 1898 to 1915, saw the establishment of numerous shore stations and the heavy exploitation of the vulnerable blue and humpback whales (Table 1). Later whaling has been carried out from a few shore stations and has exploited largely fin whales with relatively small numbers of other species. A second phase of whaling came between the two wars, with a break during the Great Depression (Table 2). It is convenient to recognize a third phase beginning during the second World War which lasted up to 1951 (Table 3). A fourth phase of whaling began in Nova Scotia in 1964 and has now spread back to Newfoundland, being stimulated by the demand for meat for human consumption in Japan and for animal food in North America. Because of the importance of conducting this whaling on a rational basis this paper has been written in an attempt to outline what is known about the populations of the large whale species in the northwest Atlantic from past whaling statistics.

During the first phase of whaling in Newfoundland and Labrador several biologists visited the whaling stations, among them Glover M. Allen, Frederick W. True and J. G. Millais. Their knowledge of whale movements and the knowledge of whaling men given to them is summarised in the paper of Remington Kellogg (1929). The history of whaling in Newfoundland and Labrador up to 1951 has been summarised briefly by the present writer (Sergeant, 1953).

Some knowledge of stocks of blue and humpback whales can be derived from catch statistics of the early phase of whaling. During the interwar period, not only were catch statistics less complete, but a good deal of pelagic whaling took place in the northwest Atlantic, e.g. in Davis Strait, at the same time as land whaling. With rare exceptions (e.g. in 1907) this was not the case for whaling at the turn of the century and following the second war only whaling from shore stations has been permitted in the North Atlantic under the schedule of the International Whaling Convention. From 1946 up to 1951 rather complete statistics of shore station whaling have been available from which it has been possible to make some estimate of the sustained yield of fin whales for the Newfoundland and Labrador area.

Whaling in Newfoundland and Labrador ended in 1951 for economic reasons rather than from depletion of stocks. During the period 1952 to 1963 intensive research on large whale species was not possible but sightings of species at sea made by observers from the Fisheries Research Board and other Canadian

Government and private agencies, and tabulation of strandings, provided some additional information on whale numbers and movements. It became clear that populations of the large whale species in the northwest Atlantic were building up to approach saturation, judging from the frequency of sightings close to shore, reports of whales feeding around fishing ships, natural deaths, and collisions with ships. Thus the present phase of whaling will be based on accumulated stocks. Present agreements by nations party to the International Whaling Convention prohibit catching of blue whales and humpback whales in the North Atlantic up to the end of the whaling season of 1969, and such agreements may be renewed for five-year periods. Thus at the present time, catching is limited to fin, sei and sperm whales and smaller species of whales.

## SPECIES STUDIES

Fin whale Balaenoptera physalus L.

In the first phase of whaling at Newfoundland blue and humpback whales were preferred to fin whales, and it is not likely that the catches of fin whales were high before figures for catch by species become available in 1903 (Table 1). The cumulative catch of fin whales from 1903 to cessation of whaling in 1915, extrapolating for years with data missing by smoothing from adjacent years, is about 4000. This is little more than the catch of 3721 fin whales (at least) caught between 1940 and 1951, a period of only 11 years, at the end of which catches had not started to decrease (Table 3). Moreover, in the first phase, although the numbers of fin whales taken declined annually, catch per effort did not decline between 1905 and 1915, i.e. the decline in catch of fin whales was the result of the gradual demise (apparently for economic reasons, (Risting 1922)) of one shore station after another. One wonders whether the fin whale was too fast a quarry for the average catcher during that period.

From 1945 to 1951 whaling was carried out from two shore stations, Williamsport in northern Newfoundland and Hawke's Harbour in Labrador. Fin whales comprised over 90% of the catch of whalebone whales. Catches averaged 464 annually over this seven-year period and showed no decline. Was this, however, an excessive catch? Table 3 shows one straw in the wind: catches of sei whales were increasing in the last three years of operation. This has frequently been a sign that the larger fin whale, more desirable for oil, is becoming scarcer.

Length frequencies for fin whales are available for the years 1944 to 1951. Those for 1947 to 1951 are shown in Figures 1 and 2. Table 5 shows a fall in the mean length of female fin whales, the larger sex, in 1950 and 1951. Not only was there a reduction in the number of large animals caught, but the percentage of under-sized animals in the catch rose considerably (Figs. 1 and 2). This means that a scarcity of large fin whales tempted the gunners more highly to take under-sized animals. On the other hand, a fall in mean lengths especially of female fin whales in 1948 is associated with high catch per effort at both stations. This suggests an influx of young animals, possibly associated with an incursion of warm water from the south, or a failure of feeding conditions further south.

Table 6 shows catch of fin whales per catcher-day in 1947 to 1951. No allowance is made for bad weather since information is not available, but periods when catchers were under repair

or used as towboats are believed accounted for. At both stations a high catch per effort occurred in 1948. Hawke's Harbour shows a steady and somewhat reduced catch per effort in the last three years, but Williamsport shows considerable fluctuations from year to year during the whole period of available data.

Catches of fin whales from Hawke's Harbour and Williamsport in 1945 to 1951 came from much the same area in all months of catching, largely east of the stations but also in the Strait of Belle Isle, and within a catcher range which extended from 50 to 55°N. Figure 3 gives an example.

Recent sightings (Table 7) extend this distribution a little further northward, to between 55 and 56°N (September 1961) but there have been very few records of large rorquals further to the northward along the Labrador coast.

The number of fin whales taken per week at Hawke's Harbour and Williamsport is shown in Figure 4. Fin whales were taken beginning in mid to late June. Heaviest catches were obtained from late July to early October. The end of the season came variably from mid-October to mid-November.

A sighting of rorquals off Funk Island, Newfoundland in October, 1950 confirms a southward movement at this time. Winter records around Newfoundland are few but there are a number of reports in March and April, some of them among or very close to the drift ice, on both eastern (Avalon Peninsula) and western coasts of Newfoundland. These include a group forced ashore by ice in St. George's Bay in March, 1959 (Table 4).

The food of fin whales was largely composed of krill (presumably euphausiid crustacea) and capelin Mallotus villosus. Krill was usually taken early in the season, being largely replaced by capelin variably between late June and late July. However, animals taken at Williamsport showed some krill taken throughout the season in 1947, and up to early August in 1948 and 1949. Capelin was by far the dominant food, being found in 88.8% of stomachs having food remains at Williamsport, and 92.8% at Hawke's Harbour. Data are not available for 1950 but the inspector at Williamsport reported many empty stomachs, while feeding at Hawke's Harbour was reported excellent. In 1951, both stations reported a high percentage of empty stomachs, 34.5% at Hawke's Harbour and 39.6% at Williamsport. Other food items were also reported for the first time: squid in 2 stomachs at Williamsport, and lantern fish in 14 stomachs at Hawke's Harbour, taken in late August and September. The species of lantern fish were identified by Mr. J.M. Lambert, formerly of the St. John's Biological Station of the Fisheries Research Board from

collections made by whaling inspector Mr. R.L. Stevenson: There were Myctophum punctatum and probably Notoscopelus elongatus (Lampanyctes resplendens).

The food of fin whales captured in 1965 off Blandford, Nova Scotia was almost invariably euphausiids. At George's Bank, in the Gulf of Maine, in October 1960, the writer observed fin whales in the vicinity of spawning herring. These observations agree with those of Mörch quoted by Kellogg (1929) to the effect that the distribution of fin whales in the North Atlantic depends on the seasonal appearance of plankton, capelin and herring.

The mean length of fin whales that were taken off Nova Scotia in 1964 was as follows:

| | Number | Length in feet | |
|---|---|---|---|
| | | Range | Mean |
| Males | 19 | 50-62 | 55 |
| Females | 32 | 52-63 | 57 |

This is a lower mean length than occurred off northern Newfoundland and Labrador, in part due to the lower legal length limit of 50 feet for Nova Scotia at present as against 55 feet for the earlier whaling. A greatest length of 32 females at Nova Scotia in 1964 of only 63 feet, and from a sample of 43 females in 1965--65 feet, confirms this picture of small-sized animals at Nova Scotia. Thus it might be possible, as Sergeant (1963) found for minke whales off eastern Canada that the largest animals migrate further to the north. However, in this case the more southerly-occurring animals would be younger. In fact, the Nova Scotian catch in 1965 included 17/43 or 39.5% pregnant females as examined thoroughly by Mr. C. Nicol of the Arctic Station staff, while catches of pregnant females at Hawke's Harbour in 1950 and 1951 when a Fisheries officer was present were respectively 78/211 or 37.0% and 92/273 or 33.7%. Thus, Nova Scotian catches do not appear, at first analysis, to contain a lower percentage of mature animals. Moreover, some mature females taken at Nova Scotia in 1965 showed high counts of corpora lutea in the ovaries, indicating an advanced age. Tentatively, I consider that the evidence points to relatively distinct stocks occurring off Newfoundland and Nova Scotia in summer, the southern stocks being composed of smaller-sized animals. This hypothesis requires testing in the future by comparison of age-length curves for the two areas, and by marking experiments.

Of the migrations Kellogg (1929) wrote as follows: "On the northward migration large numbers of finbacks have appeared in the Gulf of Maine early in March. Other good sized schools

have been observed in May and June. Finbacks approach the south coast of Newfoundland as early as June. Off the northern coast of Newfoundland and Labrador they appear in mid-July and are most numerous in August. An unusual abundance of finbacks was noted on the Grand Banks near Newfoundland on July 13, 1885. They are common summer visitors to Davis Strait and the cod banks off the west coast of Greenland." He writes further: "Southwell is the authority for the statement that the finbacks leave the Newfoundland coast in October, and yet Millais was informed by whalers that numbers of humpbacks, finbacks, and blue whales winter among the field ice on the Grand Banks off Newfoundland. It would seem that the summer feeding grounds of some of the finback and blue whale herds may be occupied during the winter months by those that have spent the summer in the far north."

The observations from Dutch merchant ships analysed by Slijper et al. (1964) show the existence in summer of rorquals, presumably including many fin whales, at relatively low latitudes (30-40°N.) in the North Atlantic, and Slijper also inclines to the view that more southern stocks exist, though these observations throw no light on the numerical abundance of the more southern stocks.

The southward limit of finbacks on the eastern coast of North America is indicated by a single stranding in Florida (Moore, 1953) and four in North Carolina (Caldwell and Golley, 1965).

Interconnection of Nortn Atlantic fin whale populations can only be demonstrated by marking. Thus the origin of fin whales visiting Davis Strait in summer is unknown; but it seems most likely tnat they would come from the Labrador Sea since the sightings summarised by Brown (1958) show that there are rorquals in mid Atlantic.

Catches at Norway and at Iceland are instructive since as Jonsgaard (1958) showed, heavy catching at land stations in west Norway and the Faeroes after 1945 eventually resulted in a decline of catches, while there has been no decline at the one Icelandic station located in the northwest of the island. This shows that there is not much east-west dispersal between different fin whale stocks in the area.

It is interesting to note that the Icelandic catching effort has been deliberately restricted by the Government of that country, and that as a result catches have not decreased and catch per effort has remained at a good level now for 15 years (Jonsson, 1965). From 1948-1964 the mean annual catch has been 378 whales, of which 236 were fin whales, followed by sperm, sei, blue and humpback whales in decreasing order of importance. Iceland ratified protection of humpback whales in 1955, and of blue whales in 1960.

Sei whale Balaenoptera borealis Lesson

Sei whales were taken from Williamsport and Hawke's Harbour in small numbers, in the main catching field east of the stations. Figure 5 shows dates of catches. It can be seen that sei whales were caught only in the latter part of the season. Food recorded was capelin in 26 stomachs, krill in 6 stomachs. There are no recent sightings identified with certainty as sei whales, and no strandings. Kellogg (1929) wrote: "Millais was informed by Captain Nielsen that sei whales made their appearance in August and September on the south coast of Newfoundland and that large numbers were observed in Placentia Bay in August, 1903. Sei whales have been taken along the east coast of North America from Florida to Labrador."

Andrews (1914) quotes the same and later reports and concludes that the abundance of sei whales off southern Newfoundland in 1903 was an extraordinary phenomenon, comparable with the invasion of the waters around Finmark in 1885 when the whaling station there took large numbers of sei whales. Since sei whales, however, were not sought after by the whalers in Newfoundland at the turn of the century, the evidence cannot be considered conclusive.

Blue whale Sibbaldus musculus L.

Catches in the early period show a sharp decline in numbers and equally in catch per unit of effort, in so far as this can be measured. Effort is measured in station-years, since the number of catchers is unknown, (Tables 1 and 8). Over the period 1903 to 1915, when almost complete statistics are available, the total number of blue whales caught in Newfoundland was approximately 1169. For the period 1898-1902 only total catch figures are available, and the catch (see Table 1) totalled 984 animals, of which about 300 may have been blue whales. This would give a total catch of blue whales in the early period of close to 1500. According to Risting, whaling was also carried out at Seven Islands, Quebec from 1911 to 1915, and in this last year the catch of 84 whales included 28 blue whales, so that the species had not been exterminated in the Gulf area. Nevertheless, the accumulated catch can be taken as a first approximation to total population of blue whales, which on this basis was in the region of 1500 animals. The sustained yield from such a population would likely not exceed 75 animals.

Figure 6 shows sites from which catches of blue whales were made in the early whaling period, where such figures are available for separate stations. It can be seen that catches were considerably greater on the south and west coasts of

Newfoundland than on the east coast of Newfoundland and Labrador.

Figure 7 shows locations of catches of blue whales in the recent whaling period, since 1940. Catches at Rose au Rue, Placentia Bay resemble those in the early period. From Hawke's Harbour and Williamsport, catches were made very largely in the Strait of Belle Isle and northern Gulf of St. Lawrence, with relatively few east of Newfoundland and Labrador. In this they agree with the early period. Figure 5 shows that this catching was concentrated early in the season, in June and July. The food of blue whales caught was invariably reported as krill, never as capelin. Jonsgaard (1955) with access to the same data discussed these features and noted another catch concentration which took place from pelagic factories in Davis Strait in 1929-34. He thus considered it likely that a substantial proportion of the Newfoundland blue whales migrated northward through Davis Strait to waters west of Greenland.

Kellogg (1929) writes as follows: "Blue whales ... off the North American coast frequent the ice-chilled Nova Scotian current and the icy water that flows from the St. Lawrence as well as that which owes its origin to the Labrador Current, but blue whales have been stranded as far south as Ocean City, New Jersey .... Blue whales are rare visitants to the New England coastal waters but as early as February they have been observed migrating eastward off the coast of Newfoundland .... On March 1, 1903 Captain Nielsen (Millais, 1906, p. 253) saw over 200 at intervals between Banquereau and St. Pierre Bank off Newfoundland. Blue whales are fairly common in March off Newfoundland and occur also in the Gulf of St. Lawrence after the ice goes out. From June to mid August they follow the "krill" but a few return in late August and small numbers stay until after November. From March to November blue whales are found off the west coast of Greenland, generally south of the Arctic Circle."

Sight records of blue whales during recent years are few, since the species is not readily recognized by other than whaling men. There are however, three recent strandings, two in the Gulf of St. Lawrence; and the third at Sable Island (Table 4).

A rorqual photographed from the air off the Nova Scotian coast by the Royal Canadian Air Force was identified from the photograph as a blue whale by Dr. M. Nishiwaki: the position was 42°21'N, 60°07'W and the date 10 September, 1962. In summer 1965 whaling crews reported blue whales to be not uncommon on the fin whale grounds off Blandford, Nova Scotia in summer.

Humpback whale Megaptera novae-angliae (Borowski).

Figure 8 shows location of catches of humpback whales in the early and recent whaling periods. Humpback whales appear to have been distributed round all coasts of Newfoundland. Figure 5 shows catching dates for the modern period. Catches were most numerous off northern Newfoundland and southern Labrador from July to September. The food was recorded as krill in 5 stomachs taken in June and July and capelin in 20 stomachs taken throughout the season beginning in late June.

Since the species is tame and easily recognizable, modern sightings are numerous and are shown in Figure 9. For the winter months November to April sightings are few and are practically confined to the Laurentian Channel and southwest edge of the Grand Bank. The wintering of humpback whales in this relatively northern area was recorded previously by Williamson (1964). During the summer months May to October humpback whales have been recorded in more coastal waters, reaching close to shore in the southern Gulf of St. Lawrence, the St. Lawrence estuary, and southern and eastern Newfoundland. Most numerous sightings have come from the fringes of the Grand Bank (Figure 9) where greatest numbers sighted in any one concentration have been 100 to 150 (Table 9). In 1959 a herd of this size appeared to move from the southern edge of the Bank in late June to the southeast shoal in late July, but was not traced further. In 1963, however, a large herd had reached the northeast shelf of the Newfoundland coastal area by mid June. Some animals appear to move round the eastern edge of the Grand Bank and some through the Avalon channel, but there is a dearth of records for the Bank itself. The continued movement northward of at least some of these animals is indicated by the catches from Williamsport and Hawke's Harbour (Figure 8). One stranded humpback whale is recorded from Gaspe (Table 4 and Figure 9).

As to the number of humpback whales occurring in the northwest Atlantic, early catches around Newfoundland give a cumulative total very close to that for blue whales, namely about 1500 whales (Table 8). Without better knowledge of dispersal, it cannot be said how wide an area would be inhabited, at one time of year or another, by such a population. Catching of small numbers of humpback whales took place in recent years in Baffin Bay and Davis Strait by the Greenland Administration, and according to Kellogg (1929) humpback whales also spend the summer off the New England coast. The species, like the blue whale, is presently receiving total protection in the North Atlantic.

Sperm whale Physeter catodon L.

Males only were taken off Newfoundland and Labrador in the modern period. Locations and dates of catch show that sperm whales were taken over the whole catch field and principally in the period from early August to early November. Food items recorded were very various, including capelin, cod, crabs, halibut, squid, wolffish and a "small black fish."

Right whale Eubalaena glacialis (Borowski)

While the species has been rare and protected for many years a specimen was taken in error from a Newfoundland shore station in September, 1951. A stranded specimen is recorded from the Gulf of St. Lawrence in October, 1954 (Table 6), and an animal probably of this species was sighted in Dildo Arm, Trinity Bay, Newfoundland in July, 1959. Whaling men at Blandford, Nova Scotia saw specimens on the whaling grounds in May, 1965. The species is seen now in fair numbers in New England waters, but has not yet been observed alive in the Gulf of St. Lawrence where it seems to have been common in the past (Allen, 1908). Possibly increase in population would expand the summer range, which, according to Allen, formerly extended north along the Labrador coast to Resolution Island.

SUMMARY

1. The fin whale is the most numerous and widely distributed species available to the whaling industry in the north-west Atlantic. Whaling in northern Newfoundland and Labrador in 1945-51 took nearly 500 annually and there were signs of incipient over-hunting before the industry ceased for reason of low oil price. These signs were (a) an increased catch of the less valuable sei whale (b) a fall in mean lengths of female fin whales (c) an increase in the catch of under-sized fin whales in later years of operation. Thus the sustained yield in this area may be of the order of 400 fin whales per annum.

2. Stocks of fin whales presently hunted off Nova Scotia in summer appear to be smaller-sized, feed on euphausiids rather than capelin, and may be relatively distinct from those summering off northern Newfoundland and Labrador. The literature (largely based on sightings) also favours the hypothesis that more northern (cold-adapted) and more southern stocks exist, their distributions being dis-placed northward in summer and southward in winter. This hypothesis, however, must be tested by tagging. On the

European side of the North Atlantic, catching history demonstrates little east-west mixing of fin whale stocks.

3. Stocks of blue and humpback whales were decimated early in the century around Newfoundland, cumulative catch totals for that period of hunting suggesting a population figure of about 1500 for each species. Blue whales are certainly not uncommon at the present time, but the species is an elusive one which may undergo long migrations. Humpbacks are a relatively common species at the present time and some knowledge is available of the seasonal movements of the species in the vicinity of the Grand Bank.

4. Sei whales are absent in the cold waters off northeast Newfoundland until late summer, and there are suggestions that fluctuations in abundance occurred off southern Newfoundland from year to year in the past.

5. Adult male sperm whales enter the northeast Newfoundland shelf area where their food is largely benthic fish.

6. The small but increasing population of right whales known in New England waters has been traced as far north as off eastern Nova Scotia, but so far only scattered records exist further northward, the inference being that the species has not yet recolonized the northern part of its former range.

ACKNOWLEDGEMENTS

I am grateful to Mr. C. W. Nicol for the use of newly-collected material from Nova Scotia, and to Mr. K. R. Allen for comments on the manuscript. Mr. B. Beck did the Figures.

REFERENCES

Allen, J. A. 1908. The North Atlantic Right Whale and its near allies. Bull. Amer. Mus. Nat. Hist., 24: pp. 312 et seq.

Andrews, R. C. 1914. The Sei whale (Balaenoptera borealis Lesson) History, Habits, External Anatomy, Osteology and Relationship. Mem. Am. Soc. Nat. Hist., N.S. Vol. 1., 291-388.

Brown, S.G. 1958. Whales observed in the Atlantic Ocean. Marine Observer, 28: 142-146, 209-216.

Caldwell, David K. and Frank B. Golley. 1965. Marine Mammals from the coast of Georgia to Cape Hatteras. J. Elisha Mitchell Soc., 81 (1): 24-32.

Jonsgaard, Aa. 1955. The stocks of blue whales Balaenoptera musculus in the northern Atlantic Ocean and adjacent arctic waters. Norsk Hvalfangst-tidende, 1955. No. 9: 505-519.

_____ 1958. Taxation of fin whales Balaenopters physalus (L) at Land Stations on the Norwegian West Coast. Norsk Hvalfangst-tidende, 1959, No. 9: 433-439.

*_____ 1966. The biology of the North Atlantic fin whale Balaenoptera physalus (L.). Taxonomy, Hvalraadets Skr. 49: 1-62.

Jonsson, J. 1965. Whales and Whaling in Icelandic Waters. Norsk Hvalfangst-tidende, 1965, No. 11: 245-253.

Kellogg, R. 1929. What is Known of the Migrations of Some of the Whalebone Whales. Ann. Rep. Smithsonian Inst., 1928, 467-94.

Moore, J. C. 1953. Distribution of Marine Mammals to Florida Waters. Amer. Midl. Nat., 49 (1): 117-158, illus.

* This publication was received after completion of the present manuscript.

Risting, S. 1922. Av Hvalfangstens Historie Christiania, J. W. Cappelen. 625 pp.

Sergeant, D. E. Whaling in Newfoundland and Labrador waters. Norsk Hvalfangst-tidende, 1953. No. 12, 1489-1504.

_____ 1963. Minke whales, Balaenoptera acutorostrata Lacepede, of the western North Atlantic. J. Fish. Res. Bd. Canada, 20(6): 1489-1504.

Slijper, E. J., W. L. van Utrecht and C. Naaktgeboren. 1964. Remarks on the Distribution and Migration of Whales, Based on Observations from Netherlands Ships. Bijd tot der Dierekunde, 34: 93 pp.

Table 1. Catches of Whales in Newfoundland and Labrador, 1898 to 1915.*

| Year | Stations | Whales | | | | | | Whales per station | |
|---|---|---|---|---|---|---|---|---|---|
| | | Blue | Fin | Hump | Sei | Sperm | Total | All species | Fin |
| 1898 | 1 | | | | | | 47 | 47 | |
| 1899 | 1 | | | | | | 95 | 95 | |
| 1900 | 1 | | | | | | 111 | 111 | |
| 1901 | 2 | | | | | | 258 | 129 | |
| 1902 | 3 | | | | | | 473 | 158 | |
| 1903 | 4 | 225 | 345 | 287 | - | 1 | 858 | 215 | 86 |
| 1904 | 14 | 264 | 690 | 281 | - | 1 | 1275 | 91 | 50 |
| 1905 | 14 | 263 | 460 | 161 | 2 | 6 | 892 | 50 | 26 |
| 1906 | 18 | 96 | 272 | 58 | 2 | 1 | 429 | 33 | 21 |
| 1907 | 13 | | | | | | 481 | 40 | |
| 1908 | 12 | 26 | 345 | 24 | - | 1 | 396 | 44 | 38 |
| 1909 | 9 | 48 | 385 | 79 | 2 | 4 | 518 | 58 | 43 |
| 1910 | 9 | | | | | | 384 | | |
| 1911 | ?4 | | | | - | | 335 | | |
| 1912 | 10 | 61 | 198 | 22 | - | 5 | 289 | 29 | 20 |
| 1913 | 8 | 12 | 165 | 8 | 2 | 17 | 222 | 28 | 20 |
| 1914 | 6 | 5 | 142 | 13 | - | 1 | 161 | 28 | 24 |
| 1915 | 3 | - | 115 | 5 | - | 19 | 139 | 40 | 38 |

* Data from International Whaling Statistics II and Annual Reports of Newfoundland Fisheries Board.

Table 2. Catches of Whales in Newfoundland and Labrador, 1918 to 1939.*

| Year | Catchers | Whales | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Blue | Fin | Hump | Sei | Sperm | Others | Total |
| 1918 | 2 | | | | | | | 101 |
| 1919 | | | | | | | | |
| 1920 | | | | | | | | |
| 1921 | | | | | | | | |
| 1922 | | | | | | | | |
| 1923 | 2 | -- | 66 | 3 | -- | 1 | | 70 |
| 1924 | 2 | 12 | 144 | 16 | -- | 8 | | 180 |
| 1925 | 3 | 12 | 270 | 35 | 4 | 10 | | 331 |
| 1926 | 3 | 10 | 329 | 18 | 3 | -- | | 360 |
| 1927 | 5 | 15 | 243 | 88 | 9 | 8 | | 363 |
| 1928 | 7 | 58 | 358 | 21 | 23 | 48 | | 508 |
| 1929 | 3 | 23 | 334 | 11 | 3 | 11 | | 382 |
| 1930 | 5 | 23 | 282 | 7 | 1 | 8 | | 321 |
| 1931 | | NO WHALING | | | | | | |
| 1932 | | NO WHALING | | | | | | |
| 1933 | | NO WHALING | | | | | | |
| 1934 | | NO WHALING | | | | | | |
| 1935 | 3 | 4 | 156 | 9 | 13 | 16 | | 198 |
| 1936 | 3 | 20 | 146 | 10 | 2 | 14 | | 192 |
| 1937 | 5 | 8 | 439 | 9 | 7 | 19 | 1[a)] | 483 |
| 1938 | | NO WHALING | | | | | | |
| 1939 | 2 | 7 | 118 | 4 | 2 | 13 | | 144 |

* Data from International Whaling Statistics II, XV.

a) Right Whale.

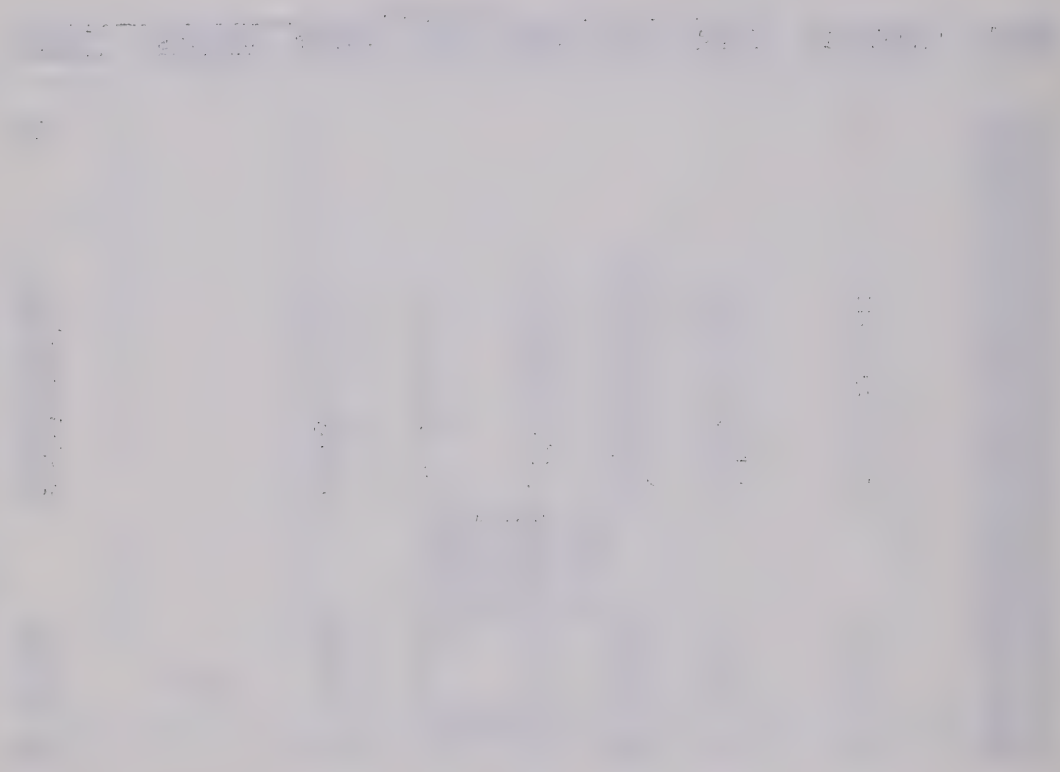


Table 3. Whaling in Newfoundland and Labrador, 1940 to 1959.*

| Year | Catchers | Whales | | | | | |
|---|---|---|---|---|---|---|---|
| | | Blue | Fin | Hump | Sei | Sperm | Total |
| 1940 | 1 | 1 | 64 | - | 7 | 6 | 78 |
| 1941 | 1 | 2 | 63 | 3 | 2 | - | 70 |
| 1942 | 1 | 4 | 62 | 1 | 4 | - | 71 |
| 1943 | 2 | (1)+ | (51) | (2) | (-) | (-) | 152 |
| 1944 | 4 | 5 | 231 | 10 | 1 | 17 | 264 |
| 1945 | 6 | 11 | 346 | 9 | 5 | 22 | 393 |
| 1946 | 6 | 11 | 502 | 5 | - | 11 | 529 |
| 1947 | 7 | 14 | 414 | 6 | 4 | 17 | 455 |
| 1948 | 9 | 57 | 672 | 14 | 4 | 14 | 760 |
| 1949 | 6 | 30 | 425 | 11 | 23 | 53 | 542 |
| 1950 | 7 | 16 | 408 | 16 | 16 | 29 | 485 |
| 1951 | 10 | 24 | 483 | 29 | 39 | 12 | 587 |
| 1952 | - | - | 1 | 1 | - | - | 2# |
| 1953 | - | - | 1 | - | - | - | 1 |
| 1954 | - | - | - | - | - | - | - |
| 1955 | - | PROTECTED | 2 | - | - | - | 2 |
| 1956 | 1 | " | 7 | - | 2 | 13 | 22 |
| 1957 | 1 | " | 23 | - | 5 | 14 | 42 |
| 1958 | 1 | " | 55 | 4 | - | 7 | 66 |
| 1959 | 1 | " | 14 | - | 5 | 1 | 20 |

* Data from International Whaling Statistics XXI, etc.

\+ Details for 1 station of 2.

\# Casual whaling only for large species by small-whale catchers, 1952-55.

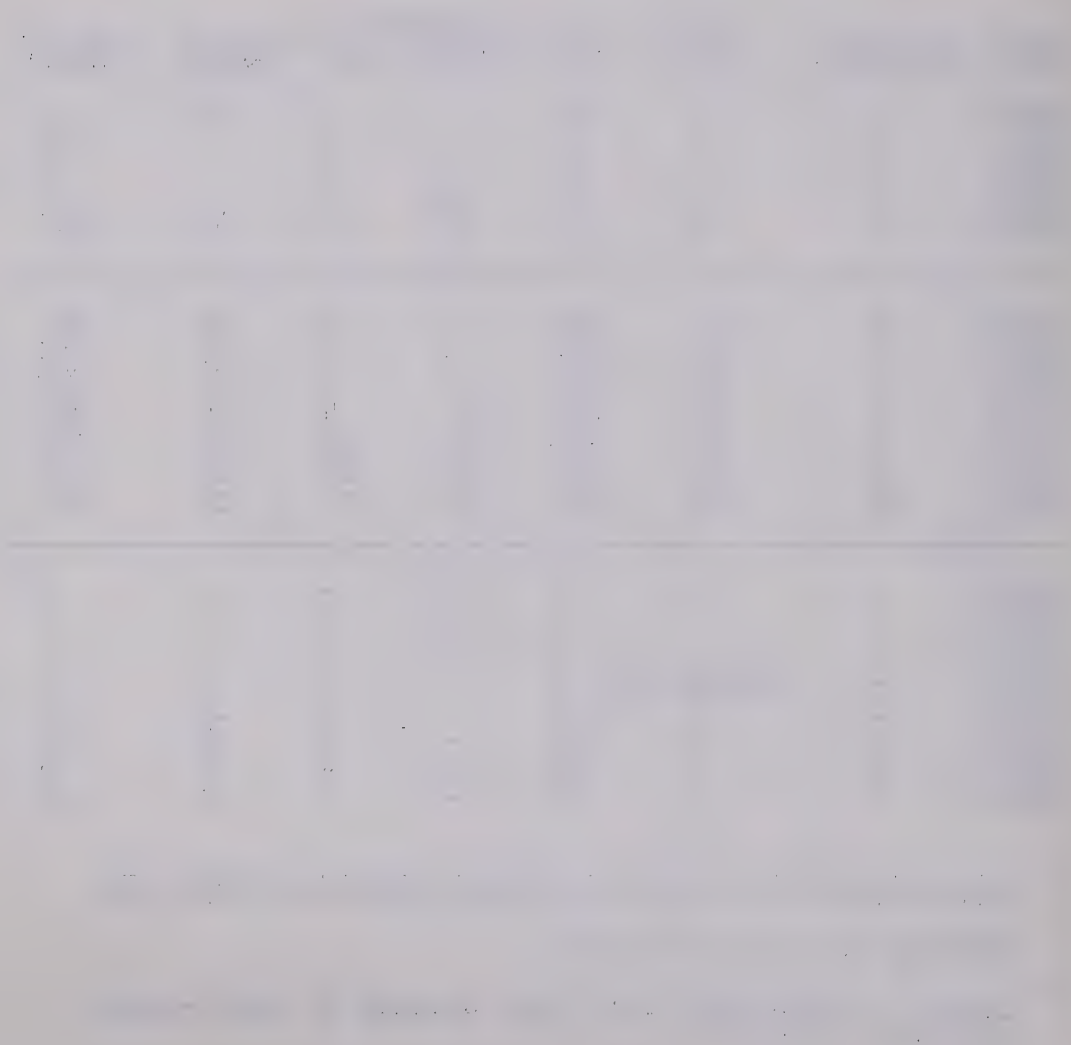


Table 4. Strandings of large whales on the eastern Canadian seaboard, 1954 to 1964.

| Date | Locality | Coordinates N.Lat. and W.Long. | | Species | Dimensions etc. | Informants |
|---|---|---|---|---|---|---|
| October 1954 | Pugwash, N.S. | 45°52' | 63°40' | Right Whale | 35 - 40 ft. | Dr. H. D. Fisher |
| February 1958 | Sable I., N.S. | 44° | 60° | Blue Whale | "80 - 90 ft." | Mr. George McAlpine per Dr. H. D. Fisher and Dr. A. W. Mansfield. |
| Oct. 25-26, 1958 | Stanhope Beach, P.E.I. | 46°25' | 63° | Fin Whale | 56 ft. | Hon. J. Angus McLean |
| March 1959 | St. George's Bay Nfld. | 48°30' | 58°30' | 12 Fin Whales | Stranded by ice | Mr. George Rendall, per Mr. Bruce Woodland |
| July 20, 1960 | Langlade-Miquelon | 47° | 56°25' | Fin Whale | 72 ft.(?) | Mr. Henry Collins per Dr. J. C. Moore. |
| Nov. 30, 1961 | Chandler, Gaspé, Que. | 48°25' | 64°50' | Humpback | 50 ft. | Dr. P. Brunel |
| Aug. 20, 1962 | Pte. aux Pères, Que. | 48°30' | 68°30' | Blue Whale | 75 ft. | Mont Joli Police Dept. photo |
| Nov. 15, 1962 | Étang des Caps, Magdalen Is. Que. | 47°25' | 61°55' | Fin Whale | 65 ft. | Mr. L. Rowdon |
| June 5, 1964 | L'Anse á Beaufils, Que | 48°25' | 64°20' | Blue Whale | 74 ft. | Dr. P. Brunel |

Table 5. Mean lengths of fin whales in feet.

| Year | Males | Females |
|---|---|---|
| 1944 | 58.3 | 63.2 |
| 1945 | 57.5 | 61.0 |
| 1946 | 59.3 | 62.1 |
| 1947 | 60.0 | 63.4 |
| 1948 | 59.1 | 61.6 |
| 1949 | 58.4 | 62.3 |
| 1950 | 58.1 | 60.6 |
| 1951 | 57.6 | 59.3 |
| Overall | 58.70 | 61.54 |

Table 6. Catch and effort data for fin whales.

| Year | Hawke's Harbour | | | Williamsport | | |
|---|---|---|---|---|---|---|
| | Catcher-Days | Fin Whales | Fins per Catcher-Day | Catcher Days | Fin Whales | Fins per Catcher-Day |
| 1947 | 420 | 264 | 0.63 | 296 | 150 | 0.51 |
| 1948 | 465 | 389 | 0.84 | 320 | 278 | 0.87 |
| 1949 | 540 | 248 | 0.46 | 305 | 177 | 0.58 |
| 1950 | 612 | 275 | 0.45 | 250 | 133 | 0.53 |
| 1951 | 665 | 296 | 0.45 | 220 | 187 | 0.85 |

Table 7. Recent observations of fin whale abundance off northeast Newfoundland and Labrador.

| Year | Date | Locality N.Lat. | W.Long. | Observations | Observer | Ship |
|---|---|---|---|---|---|---|
| 1959 | July 30 | 54°40' | 56°40' | About 50 fin whales, 3 to 7 at any one time during 5 hour northward passage. | Capt. B. Blackwood. | A.T. Cameron |
| 1961 | Sept. 12 | 56°00' | 58°25' | 55 fin whales | A. W. Smith | Sir Humphrey Gilbert |
| 1962 | Aug. 11 | N. of Funk I. | | About 60 fin whales in 20 sq. mile area | A. W. May | A.T. Cameron |
| 1962 | | Funk I. to Grey I. | | ca. 12 whales | " | " |
| 1962 | Aug. 12 | Off St. Anthony Belle Isle and S. Labrador | | Scattered whales | " | " |
| 1962 | Aug. 13 | 53° | 54°10' | About 100 large rorquals, probably fin whales. None north of 53°30'. | " | " |
| 1965 | Aug. 5 | 53°24' | 54°40' | 8-10 fin whales | E. H. Grainger | Calanus |

Table 8. Cumulative catch and catch per unit of effort of blue and humpback whales for part of the early whaling period.

| Year | Cumulative Catch of: Blue Whales# | Humpback Whales# | Catch per Station-Year Blue Whales | Humpback Whales |
|---|---|---|---|---|
| 1903 | 225 | 287 | 56 | 72 |
| 1904 | 489 | 568 | 19 | 20 |
| 1905 | 752 | 729 | 15 | 9 |
| 1906 | 848 | 787 | 7 | 5 |
| 1907 | 909 | 828 | - | - |
| 1908 | 935 | 852 | 3 | 3 |
| 1909 | 983 | 931 | 5 | 9 |
| 1910 | 1035 | 991 | - | - |
| 1911 | 1091 | 1032 | - | - |
| 1912 | 1152 | 1054 | 6 | 2 |
| 1913 | 1164 | 1062 | 2 | 1 |
| 1914 | 1169 | 1075 | 1 | 2 |
| 1915 | 1169 | 1080 | 0 | 2 |

# Catch figures for 1907, 1910 and 1911 were estimated by smoothing from years immediately before and after. Catch figures for 1898-1902 are not available and a crude estimate must be made from total catch and added to the cumulative catch obtained (see text).

Table 9. Recent sightings of humpback whales in the vicinity of the Grand Bank.

| Year | Date | Lat. | Long. | Locality | Numbers | Ship |
|---|---|---|---|---|---|---|
| 1959 | June 5 | 43°10' | 49°38' | S.Edge | 1 | A.T. Cameron |
| 1959 | June 21 | 42°45' | 50°30' | S.Edge | 100-150 | A.T. Cameron |
| 1959 | July 10 | 42°45½' | 50°29' | S.Edge | 20 | A.T. Cameron |
| 1959 | July 13 | 43°31' | 49°23½' | S.Edge | 1 | A.T. Cameron |
| 1959 | July 13-17 | 44°13' | 49°44' | S.E. Shoal | Unstated | A.T. Cameron |
| 1959 | July 25-Aug. 5 | 44°13' | 49°44' | S.E. Shoal | 100-150 | A.T. Cameron |
| 1962 | June 15 | 46°35' | 47°20' | E.Edge | 1 | A.T. Cameron |
| 1962 | Sept. 1 | 48°02' | 48°50' | N.E. Shelf | 20 | Cyrus Field |
| 1962 | Oct. 3 | 48°09' | 48°56' | N.E. Shelf | 3 | Cyrus Field |
| 1962 | Oct. 13 | 42°50' | 50°47' | S.Edge | 1 | A.T. Cameron |
| 1963 | June 13 | 49°24' | 51°32½' | N.E. Shelf | 100 | Sackville |

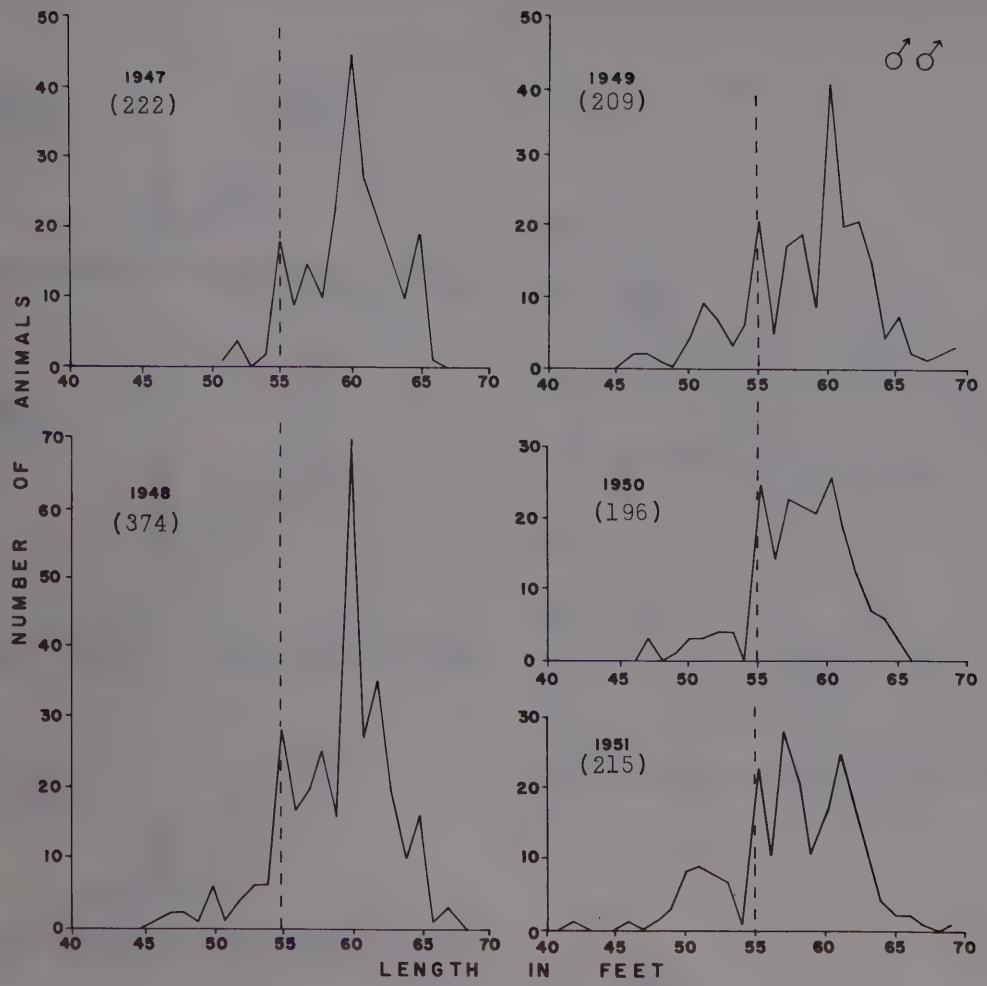



Fig. 1. Length frequencies of male Fin Whales taken at Hawke's Harbour and Williamsport. The legal minimum length is shown by the vertical hatched line.

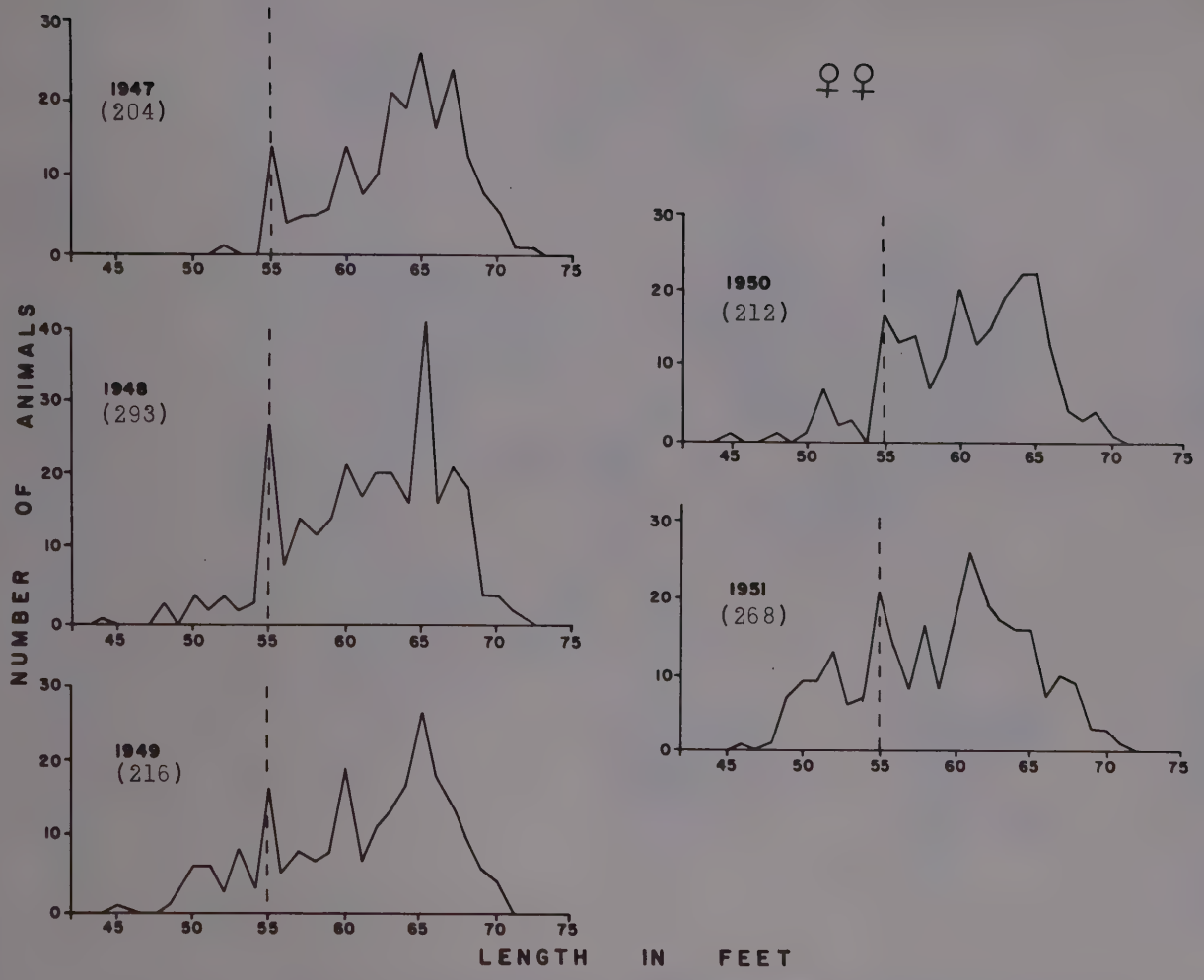



Fig. 2. Length frequencies of female Fin Whales taken at Hawke's Harbour and Williamsport.

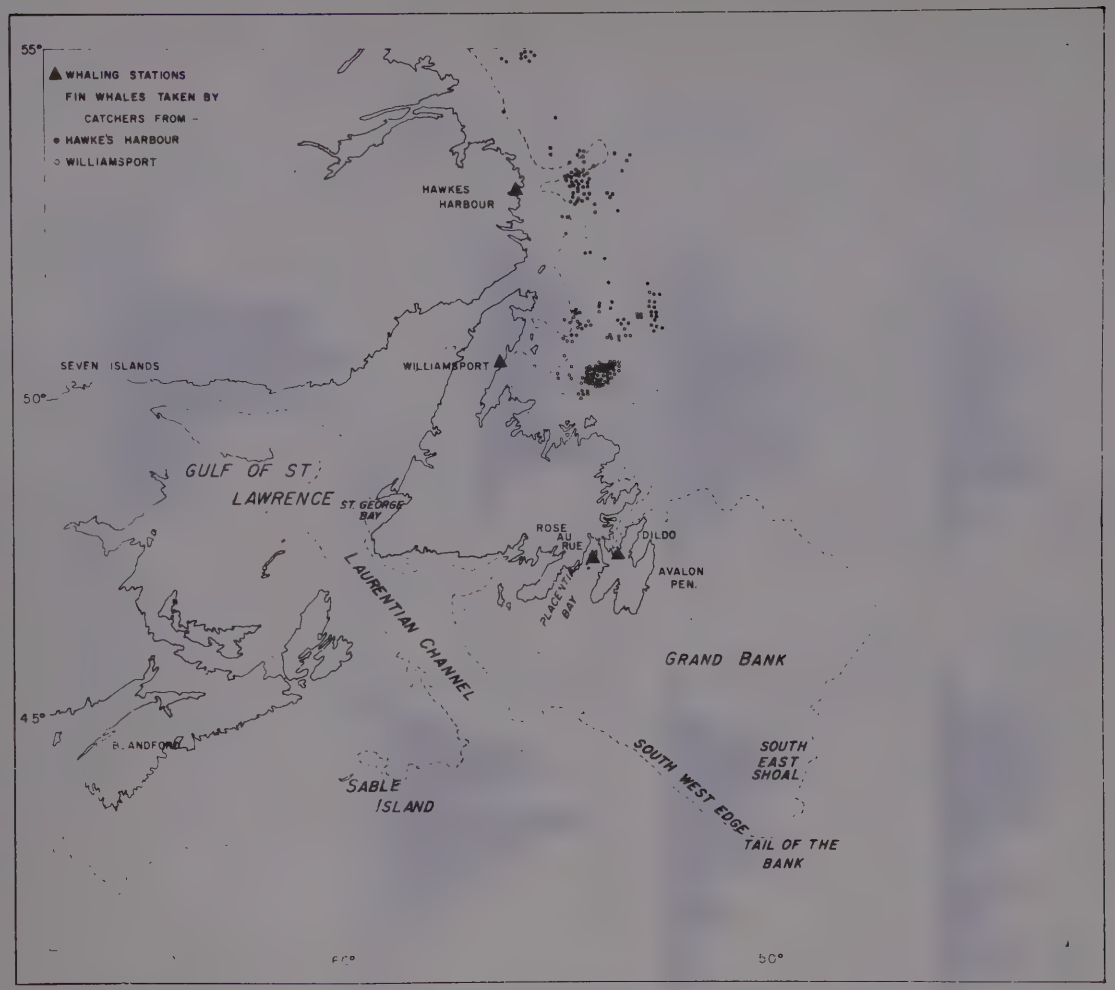



Fig. 3. Positions of Fin Whales captured in August, 1951 and place names mentioned in the text.

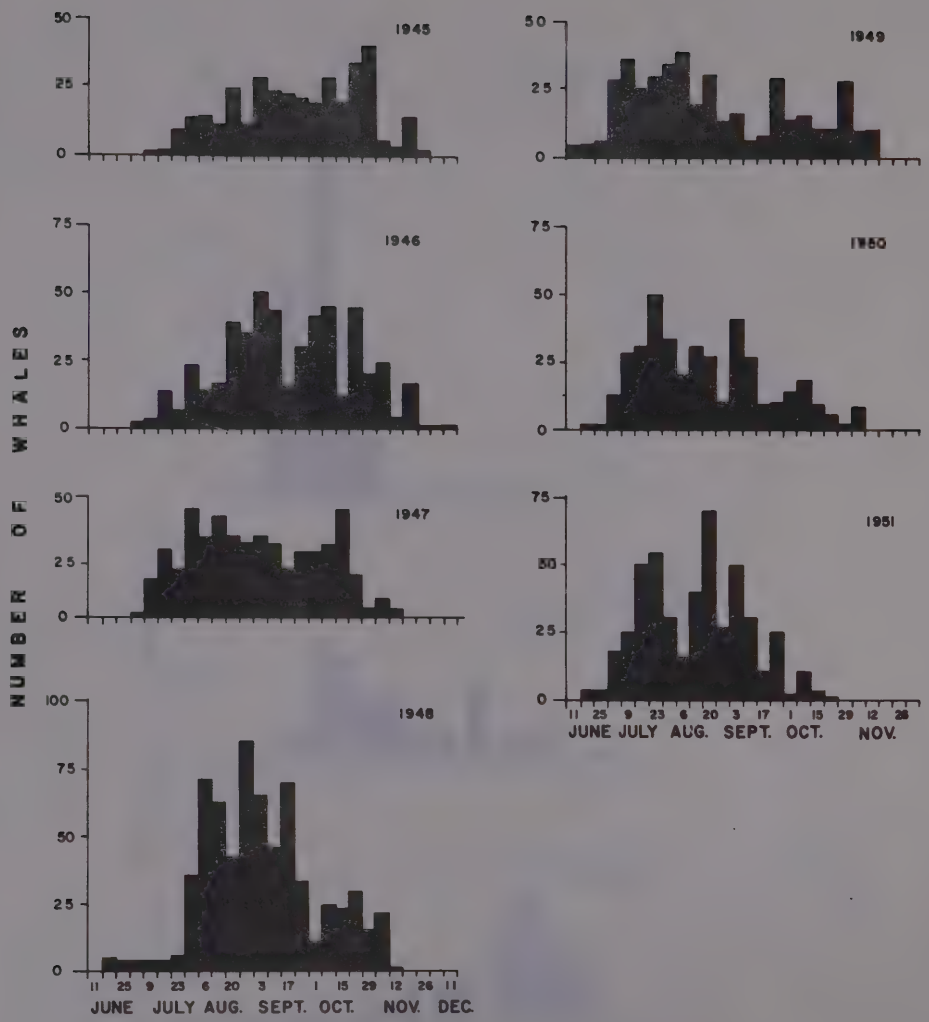



Fig. 4. Number of Fin Whales taken per week at Hawke's Harbour and Williamsport, 1945-51.

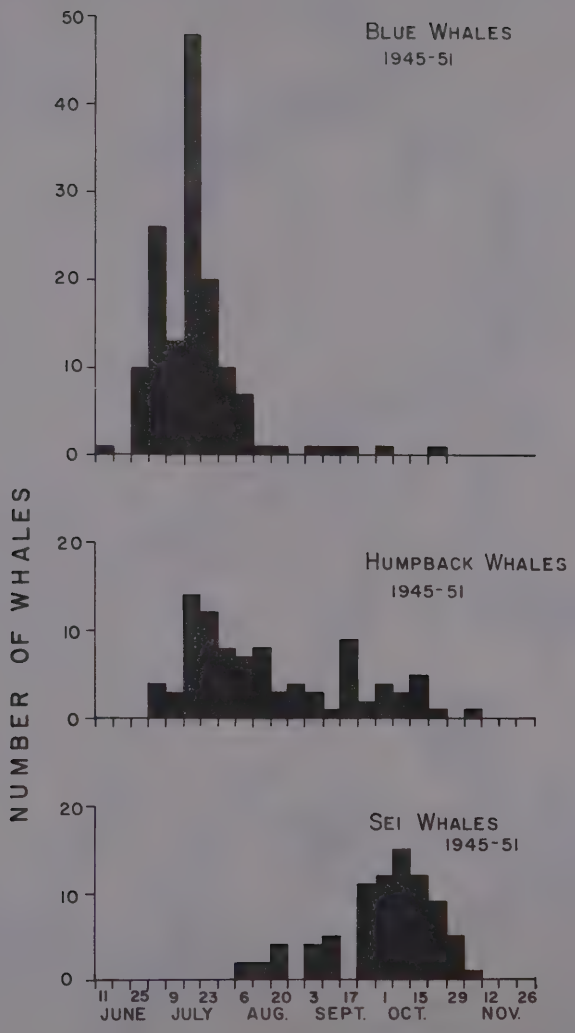



Fig. 5. Number of Blue, Humpback and Sei Whales taken per week at Hawke's Harbour and Williamsport, 1945-51.

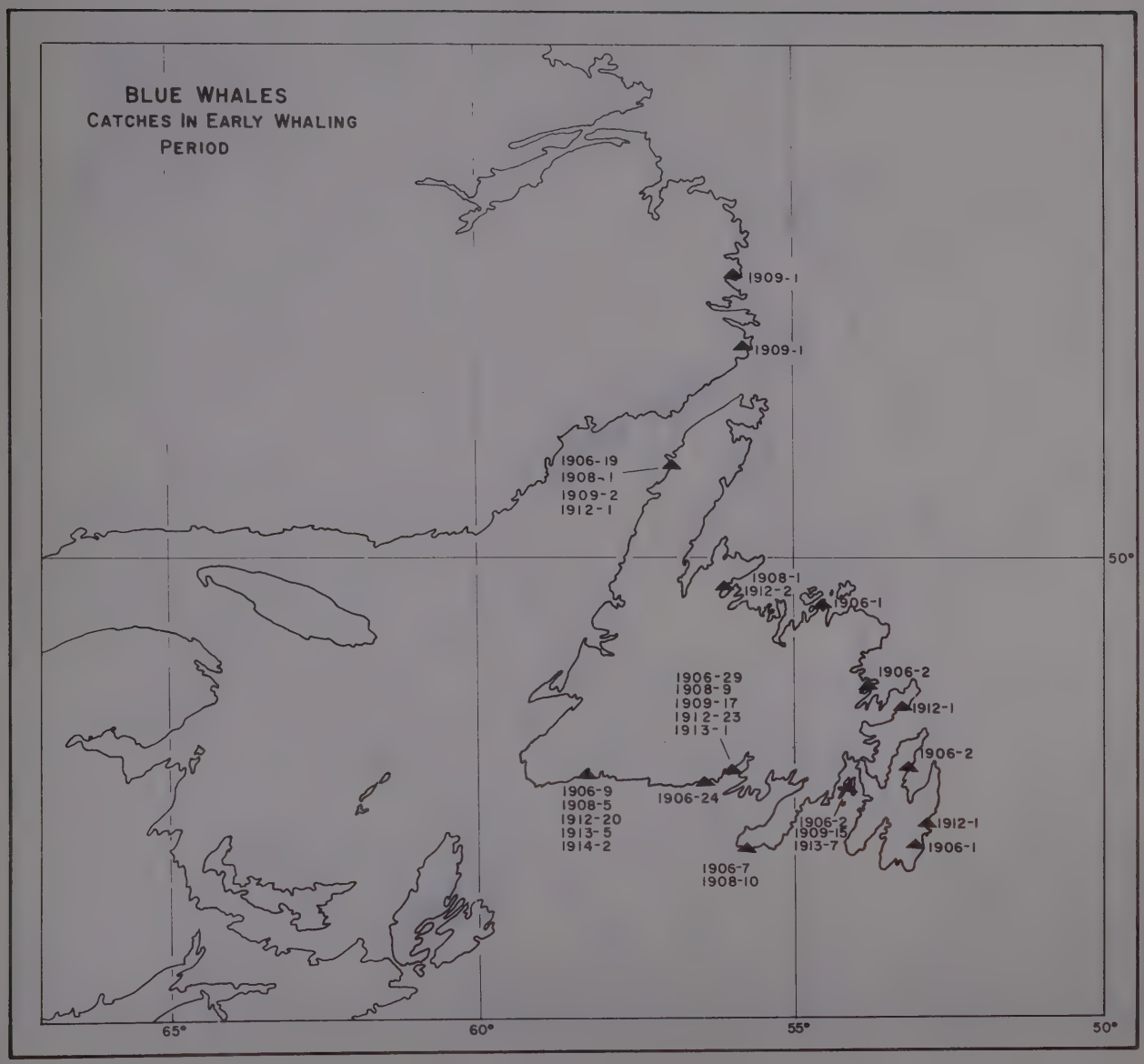
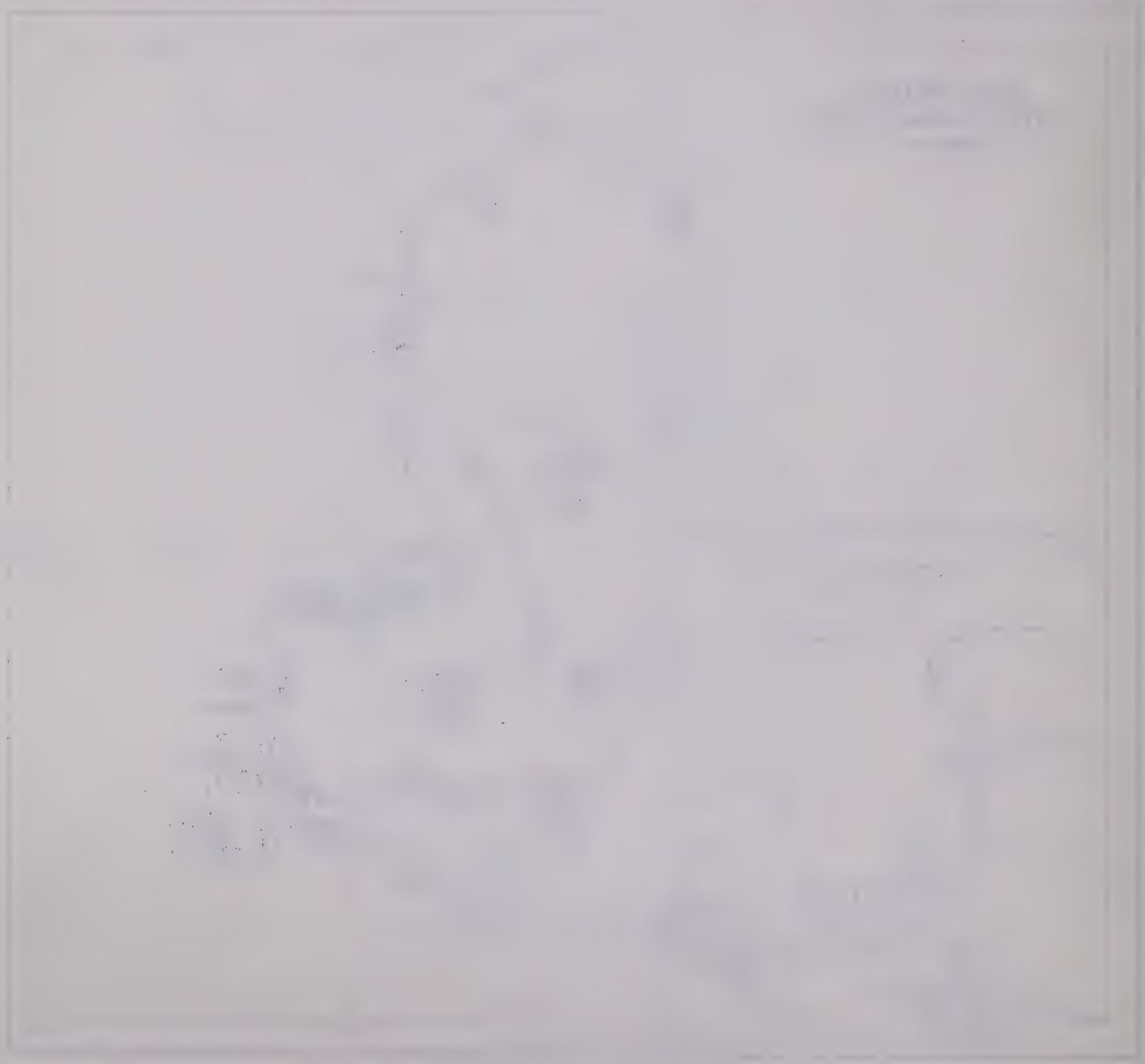



Fig. 6. Number of Blue Whales taken per annum at different sites in the early whaling period.



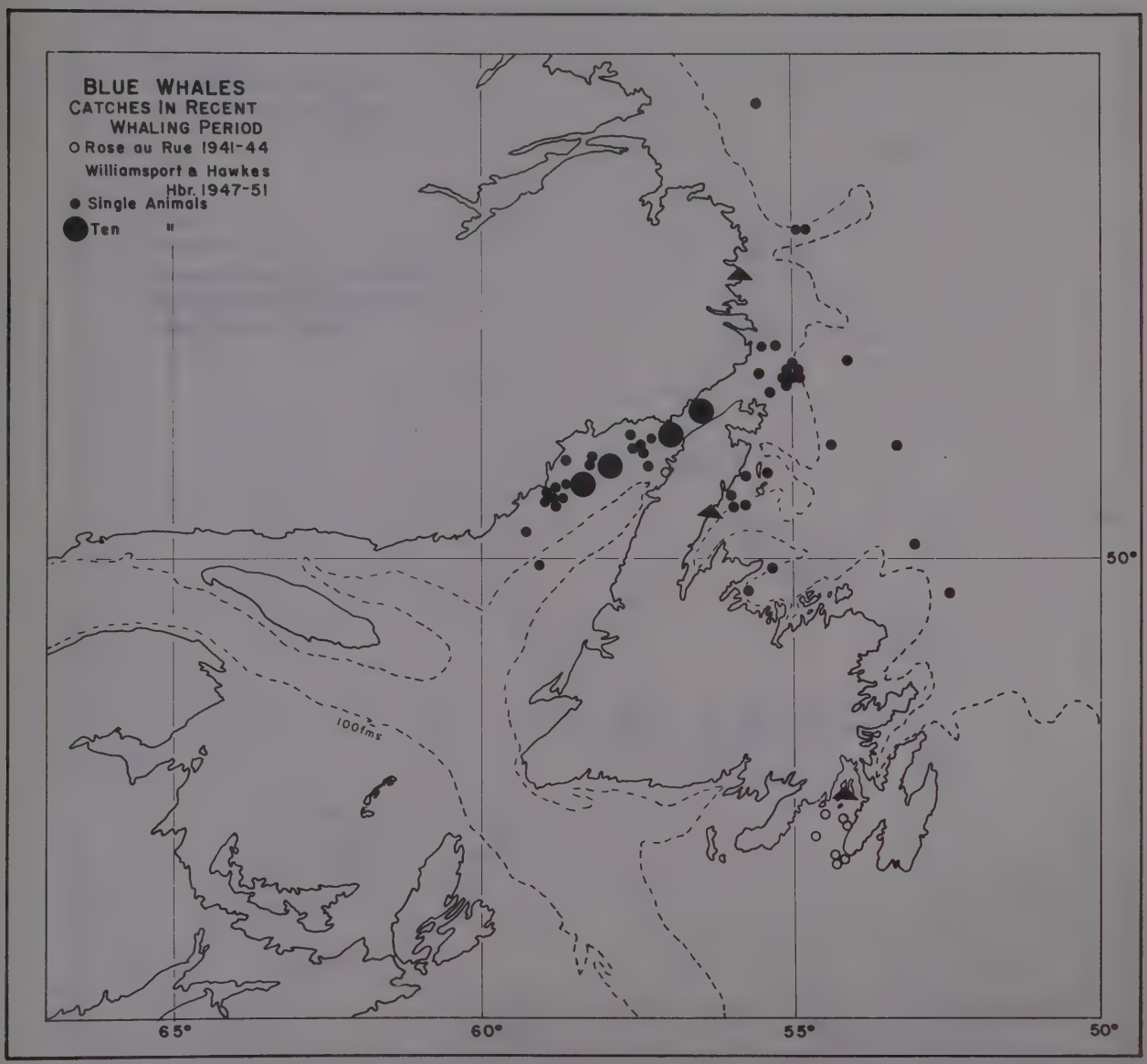



Fig. 7. Locations of catch of Blue Whales in the recent whaling period.

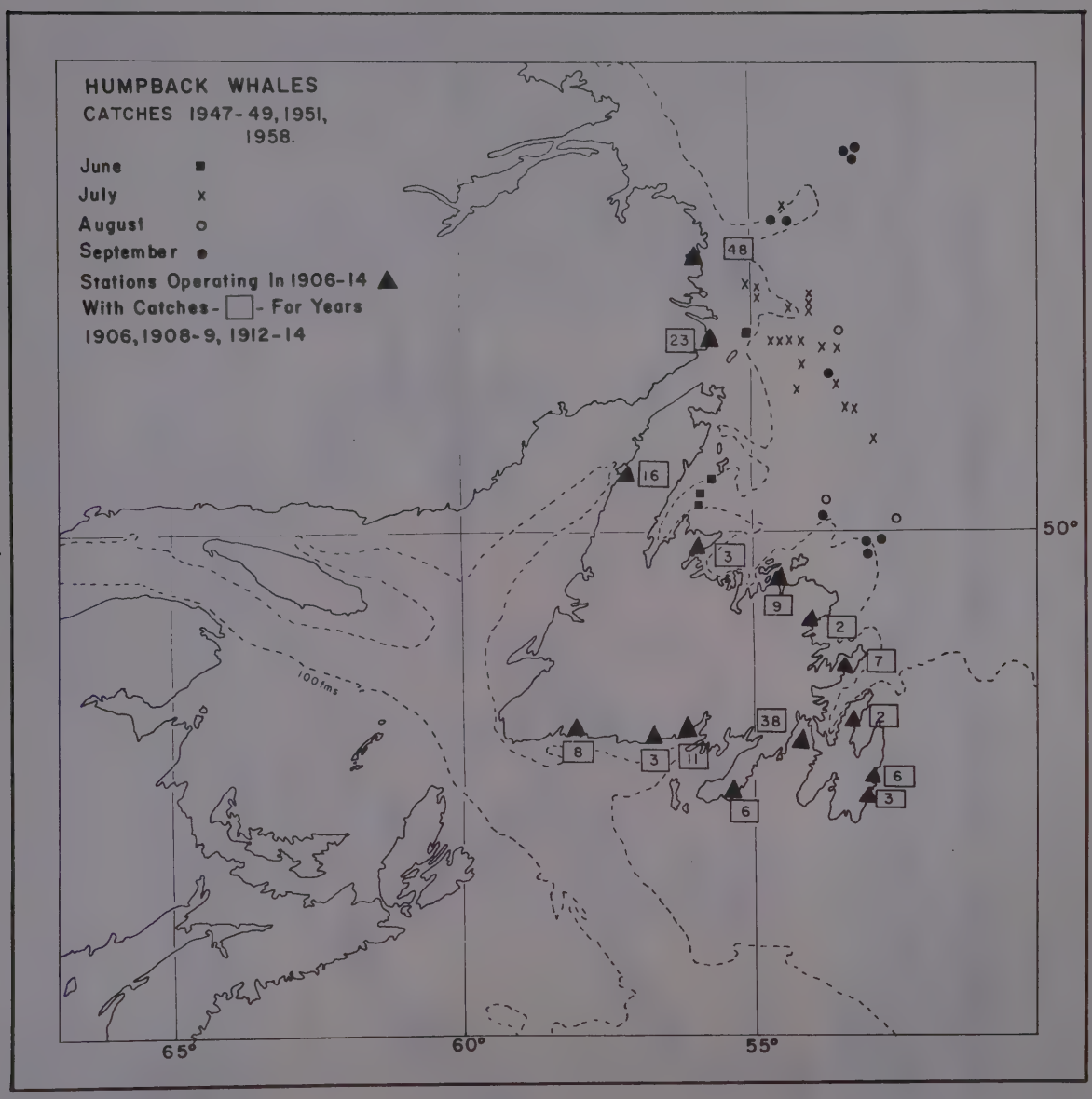



Fig. 8. Humpback Whales: Sites of catch for the early whaling period, and locations of catch by months from Hawke's Harbour and Williamsport in the recent whaling period.

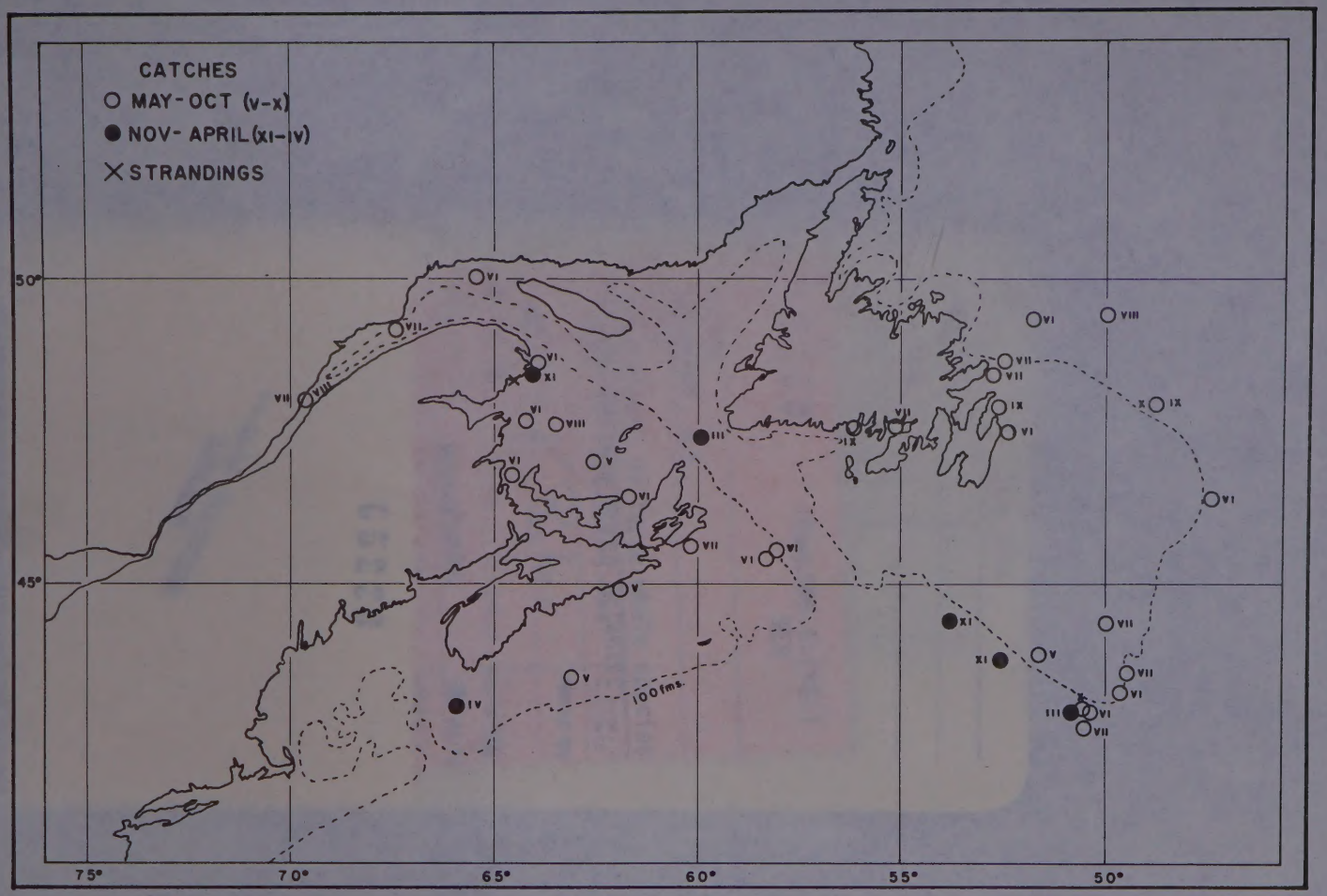
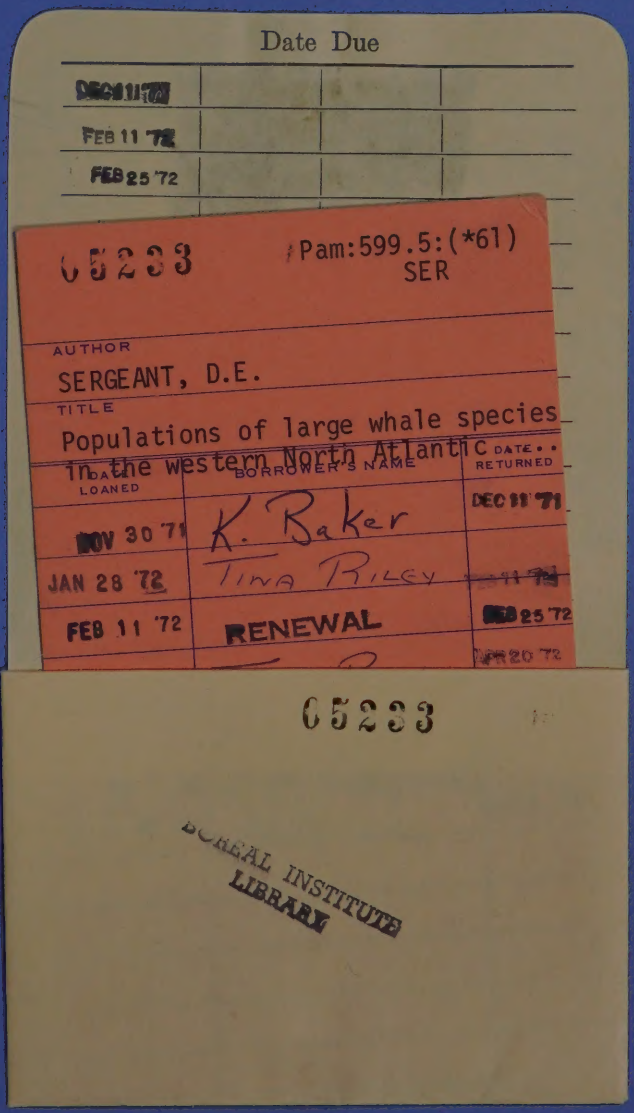



Fig. 9. Sightings and a stranding of Humpback Whales in 1958-64.

FIG. 2. Stations and catches of Humboldt squid in 1979-84.



Date Due

DEC 11 '71
FEB 11 '72
FEB 25 '72

05233 Pam:599.5:(*61) SER

AUTHOR
SERGEANT, D.E.

TITLE
Populations of large whale species in the western North Atlantic

| DATE LOANED | BORROWER'S NAME | DATE RETURNED |
|---|---|---|
| NOV 30 71 | K. Baker | DEC 11 '71 |
| JAN 28 '72 | Tina Riley | [illegible] |
| FEB 11 '72 | RENEWAL | FEB 25 72 |
| | | JAN 20 72 |

05233

BOREAL INSTITUTE LIBRARY

University of Alberta Library
0 1620 0329 7262